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Renewable Energy Projects: Acceptance Risks and Their Management

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ABSTRACT

Current renewable energy projects are increasingly afflicted with the challenge of an apparently alternating acceptance by concerned parties. Attitude parameters adopted by parts of these social groups which especially at the outset of such planning processes seemingly tend towards "acceptance" such as "incertitude" or "conditional acceptance" represent above-average pronounced risk factors in view of the project proponent's planning and cost certainty. This is even more true if either the expected conditions or the corresponding compensation measures for these social groups are not or cannot be implemented in a perceptible manner, bringing the latter to change to negative attitudes towards the project in a way which often surprises the project proponent. Based on the experiences gathered during the analysis of a case example (on a renewable energy infrastructure project in Germany), the present work introduces possible instruments allowing to identify these particularly high-risk social groups and discusses assets and drawbacks of different management strategies to handle various types of acceptance risks. It thereby also becomes clear that the outcomes always need to be interpreted beyond the background of the specific local and regional context respectively.

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1. Introduction

Current renewable energy projects, especially those dealing with the use or the storage of wind, solar or water energy, are increasingly afflicted with the challenge of an apparently alternating acceptance by the parties concerned. In this context, the time

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horizons of the persons concerned do not seem to run parallel to those steering the planning implementation schedule of the project proponent and of the approval authorities respectively: in the course of the mostly long lasting planning period of large-scale projects, there is hardly any evidence of public resistance and non-acceptance, even in the framework of formal procedures of civic participation. It is not until shortly before the beginning of the implementation measures (for instance construction works) that often a volte-face of the supposed "acceptance" or "undetermined assessment" towards a "non-acceptance" or even an active opposition to the project is perceived, even if general environmental and social benefits of the projects are widely expected.[1] As the majority of formal procedures of civic participation have already been closed at this point of time, the project's opponents, often organised by then, fall back on high-publicity events such as demonstrations, site occupations etc. At this stage, a confrontation between the two factions of "opponents" and "supporters" mostly cannot be prevented any more, entailing a range of acute, but also lasting negative effects for both sides (loss of trust, loss of planning security for the project proponent, financial losses for numerous actors, demotivation of the actors, partly even violent conflicts with damage to persons and property, etc.). An infamous current example of such a development is the large-scale public transport infrastructure project "Stuttgart 21" in Southwest Germany (cf. inter alia [4,5]).

Hence, it is of vital importance for the project responsibles to recognise and adequately react to a "turnaround" of the parties concerned from a supposed attitude of "acceptance" to an "active opposition" in order to assure the general feasibility of large-scale projects in the future. In this respect Batel et al. [6] call for a more differentiated view on different notions of what is often called "acceptance": support, resistance, apathy, uncertainty. Especially the attitude of "conditional acceptance" connected with conditions [7], but also the indecisiveness of the persons concerned seem to play a key role here, holding a particularly high risk of inducing a "turnaround of acceptance". To assess the attitudes and their influencing factors of different social groups among the concerned population regarding a particular project in order to obtain a basis for the prognostic estimation of their possible action orientation, an early appraisal seems to be a precondition. The following reflections therefore focus on the possible ways of managing the threat that a position of acceptance or indecisiveness as to a project turns into an attitude of non-acceptance, a planning risk which is especially high for the project responsible. By means of an analysis of a case example, the present work therefore aims at developing components allowing to diagnose and to manage the peril of a "turnaround of acceptance", i.e. of a reversal of attitudes in the course of planning procedures for such projects.

2. Analysis of existing approaches and problems

2.1. Acceptance and attitude

Whether the notion of "acceptance" describes an attitude or a behaviour has been subject of an ongoing discussion which will probably never be definitely closed (cf. [6] and compilation in [8]), as these terms refer to different perspectives which need to be adopted depending on the context. Hence, also the spectrum of influencing factors is similar in both fields (cf. Fig. 1); however, both notions are involved in a different way and extent. Therefore, in this context, the present work clearly distinguishes between "attitude" and "behaviour". Accordingly, "acceptance" refers to a range of positive attitude parameters adopted by subjects of acceptance (parties concerned by planning) as to an object of acceptance (planning project). The choice of a certain attitude parameter results from socio-culturally influenced perceptions and experiences as well as from expectations emerging within a certain context based on an individual assessment process [9]: "Acceptance is motivated by different goals or end-states towards which people strive" [8]. In this context, goals perceived as economically profitable are especially relevant ("individuals…will choose options with the highest gain" [8]). The attitude developed this way can be considered as "disposition of relative temporal consistency to react on a certain object in a specific way" (Meinefeld 1977, p.27, quoted after [9], p. 10f). Depending on the intensity of social interaction, social groups may develop inter-subjectively shared attitudes [9,10]. For this reason it is essential to consider the "socio-cultural frame of reference" ([9] p. 12) of the parties concerned by planning similarly as their framework of individual psychological drivers ([8]; see Fig. 1). Above, it becomes clear that while identifying social groups with a homogeneous attitude positioned in the sphere of a certain risk to change this attitude towards a certain planning project, all possible attitudes need to be analysed rather than merely focussing on those located in the acceptance sphere ([6] p. 5). An important reason for this approach is that attitude parameters are temporary categories with a low selectivity, directly attached to spheres of acceptance or rather of dissent. At the same time, the manifestation of risk of the respective attitude parameters located within the sphere of the "attitude change risks" strongly diverges. For example, due to their comparatively high resilience to external influences, "tolerance" or "indifference", have a clearly lower "attitude change risk" than the especially risk-prone attitude parameters of "conditional acceptance": The latter may, if the parties concerned by planning perceive a non-observance or even observance of the respective conditions (mostly economic compensation) suddenly change into other attitudes.

2.2. Approaches to understanding acceptance

In the German-speaking area, acceptance tests have so far primarily been made in the framework of conservation area planning procedures [9–11] as well as in connection with wind energy projects [2,12–14].

The according test results revealed that especially in case of larger interventions, the parties concerned by planning perceive in general relatively high location risks, for instance in view of the environment or physical health. The perceptions and valuations of this kind of risks on the side of concerned social groups may be different from those of the experts, for instance due to a different feeling of "trust", for instance concerning the project proponents (Siegrist, Earle and Gutscher 2007 cited in [15] p. 210). But these perceptions may also change. One example is that project risks can be suddenly tolerated or even accepted by certain social groups if a perceived use of the project is considered to have "more importance" than the perceived risks [16]. This is not the case if the "official" use is mostly anonymous (example: "general environmental benefits of renewable energy projects") as this kind of use does not necessarily inure to the location's benefit [p. 201]. Sauer et al. [7] note that roughly one fourth of the interviewees only gave their consent to establish conservation areas of natural habitats and of wild fauna and flora on condition that notably economic compensation measures were implemented. Also Rentsch [9] and Hall et al. [18] found out that the population's concernment with regard to their material, i.e. economic interests, vitally influences their perception of a planning project. In this respect Musall and Kuik [2] figured out that community co-ownership of large wind energy projects enhances its social acceptance. Finally Zoellner et al. [19] identified economic

[1] The so called "NIMBY"-effect ("not in my backyard") mainly correlates the grade of acceptance of a project with the spatial distance of the concerned parties. Actually, this explication does not seem to be sufficient ([1–3]).

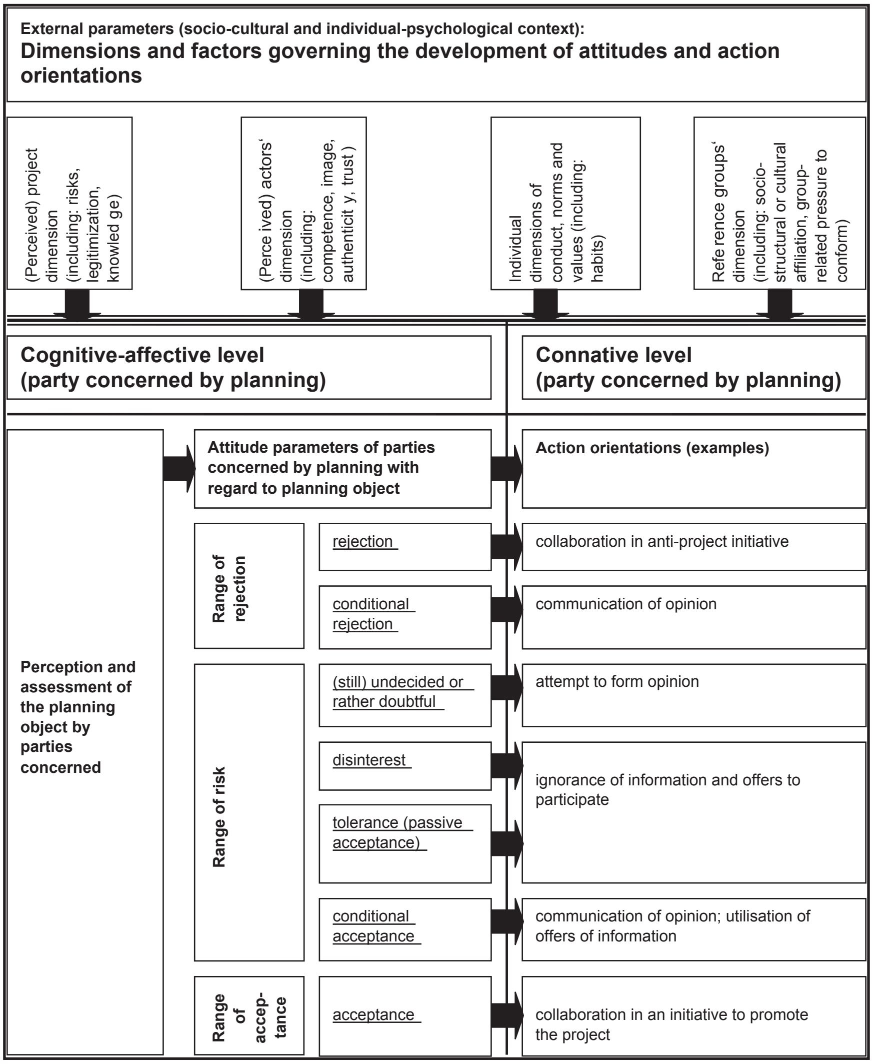


Fig. 1. Model of the evolution of attitudes (see text for explanations; after [7,8,20,21], modified).

estimation as the "strongest predictor for a reported acceptance". This kind of perception thus seems to be intimately connected with the attitude parameter of "conditional acceptance" [7].

Therefore, several reasons substantiate the focussing on "conditional acceptance", as it is not only the attitude parameter with the highest risk to trigger a change in attitude but also, as far as known to date, a widely spread attitude among the affected social groups and thus also relevant from a quantitative point of view. However, also other attitude parameters in the risk area (example: "uncertainty") may be relevant, notably if the respective groups who hold this attitude parameters are either influential or quantitatively significant. Accordingly, both subgroups together are relevant in view of a possible planning risk or rather the planning security of a renewable energy project. The question arises if and how the requirements on an "acceptance risk management" – so far primarily defined for nature reserve and wind power plant planning – also apply to other renewable energy projects, and how such a management system may basically be conceived.

2.3. Management of acceptance risks: methodological framework

As demonstrated above, the approaches pursued so far fail to match the requirements on a management tool allowing to deal with "acceptance risks".

According to Luz [11], the already above mentioned difference in perception of a project's impacts by the population on the one hand and the expert's assessment on the other hand can lead to acceptance problems of landscape preservation measures. Luz [11] found out that the population adopted less and less sceptical positions with increasing state of knowledge – however, this was only examined regarding the population's assessment of ecological risks. As a consequence, an offensive communication strategy could be suitable in this case. In addition, Raven et al. [22] point out that expectations of stakeholders regarding new energy projects particularly concerning socio-economic processes as well as their early articulation are crucial in view of their respective attitude to the project.

It is clear that this is especially the case if there is a gap between the project's assessment and perception by the affected population on the one hand and its (local) economic effects as basis for the assessment of its feasibility on the other hand.

In order to bridge this gap, the authors suggest combining the two following method modules: an empirical acceptance analysis and a "classic" regional economic impact analysis with the objective to develop…

- … an evaluation tool allowing to collect the current mindset of the population concerned in view of a project, especially in order to identify parties affiliated to the range of risk, and

- … a tool to assess the feasibility of the venture's (mostly economy-related) conditions ("Question for the use of a project for the society", [4]).

According to the authors' opinion, this combination will permit to reveal possible discrepancies between the expectations of the social groups affected by the project as to economic effects, as well as the economic effects' occurrence probability or rather feasibility. The authors assume that the larger are these discrepancies, the higher is the risk for the conditional acceptance to change suddenly. Above, the enquiry may serve to find out the need for possibly necessary compensation negotiations [16]. The objective of the analysis of the following case example is therefore to develop a tool allowing to evaluate and to manage the acceptance risk.

3. Case example

3.1. Introduction

This tool was developed in the framework of a case example analysis on a planning procedure dealing with the expansion and parallel modernisation of a renewable energy infrastructure project in Germany in 2011.

Beside the need to consider the close links between "acceptance" or "attitude" and "economic impacts", there were some other demands concerning the details of the method modules:

(1) The method system should fit in the framework of the project planning procedures and should also meet the needs of the project promoter.
(2) The method system should consider the regional specifics of the socio-cultural framework.

Consequently, a method mix was selected consisting of two linked main modules:

- Module 1: Representative Survey to find out the attitudes of the concerned people and their influencing factors
- Module 2: Regional Economic Impact Analysis concerning the planned project

3.2. Module 1: Representative survey

By means of a standardised questionnaire, about 350 respondents forming a representative sample of the local people affected by the planning were asked on their state of knowledge on the planned investment, their perception of their living environment, the impacts expected by them as well as on their assessment of both the planned investment and the existing energy infrastructure site.

The case example area can be characterised as "economically underdeveloped". For instance, following a phase of deindustrialisation over the past years (in the planning community, only about 9% of the employees subject to social insurance contributions were still working in the manufacturing sector in 2010, [23]), no appreciable income possibilities have been created anymore, a condition of which the persons affected by the planning project are highly aware: accordingly, in response to a corresponding question of the survey, 32.1% of the respondents advocated a future utilisation of parts of the planning area "preferably for the development of settlements, industry and trade", assigning this type of use almost the same significance as the top ranking utilisation for "a moderate form of tourism such as hiking, also for nature conservation". This is also remarkable because parts of the planning area are currently being discussed as future national park district. Therefore, the further analysis will deliberately neglect the likewise mentioned ecological conditions and focus on the economic conditions mentioned by the respondents.

In order to identify the subgroup of persons with a conditional acceptance of the large-scale project in comparison to the entirety of parties affected by planning, they were asked special questions on the "assessment" and "perception" ("The result of perception and assessment is an attitude which may occur as acceptance",[9] p. 10). In a second step, the expectations arising from this as well as other influencing factors on attitudes were balanced with the results of a regional economic analysis of the planned investment in order to be able to forecast its expected economic effects. Thus, statements could be made on social groups with attitudes in the risk sphere.

3.3. Results of module 1: Attitudes and their influencing factors

3.3.1. Overview

In order to identify the attitude towards the project prevailing at the time of the survey, the respondents' current assessment of the project ("positive", "negative", "still undecided") was taken as basis. It turned out that at this relatively early stage of planning (prior to the regional planning procedure), nearly 75% of the respondents agreed to the planned project. Only 3% of the interviewees put forth a negative assessment of the project, while nearly 25% of the respondents had not made up their mind yet. Although this seems a satisfying result for the project proponent at first sight, it yet holds potential risks due to its temporality and the relatively high share of undecided respondents. To allow a more precise risk identification, it is crucial to analyse the influential factors relevant for this assessment. Cross-classified tables contribute to identify possible connections between the project′s assessment and other variables (Tables 1 and 2). To back up these potential connections statistically, a coefficient of contingency[2] was additionally calculated in each case (Table 3).

3.3.2. Influencing factor "site assessment"

It is especially the attitude towards the present energy infrastructure site which has existed for nearly 100 years now [24] which largely influences the project assessment. The existing location is largely approved, achieving about 85% of acceptance among the respondents, disproportionately many of which also agreed to the planned project. This correlation is significant and is to be judged moderately strong[3] with a coefficient of contingency of 0.5 (Table 3). Combined with the likewise detected correlation as to "confidence in the project proponent", this result suggests a high level of trust which the project proponent has succeeded to win in the region since the foundation of the location 90 years ago, and which seems to strongly impact the acceptance of current planning projects to this date.

[2] The coefficient of contingency according to Pearson is based on nominally scaled variables and therefore cannot indicate any direction of the correlation. It can only help to find out whether the connection between the variables is significant and how strong it is. The coefficient can assume values between 0 and at most 1. The actual upper limit depends on the number of columns and rows in a table, this is considered by the corrected coefficient of contingency [25].

[3] According to Duller [26] the coefficient of contingency can be read as follows: $C=0$ no correlation; $0<C<0.3$ low correlation; $0.3<C<0.7$ medium-strength correlation; $0.7<C<1$ high correlation; $C=1$ complete correlation (only in theory).

Table 1
Cross-classified table: expected effects (new orders for local economy) during the construction phase and attitudes towards the project ("Project assessment").

Expected effects during the construction phase			Project assessment			Total
			Overall positive	Overallnegative	Still undecided	
New orders for local economy	No	Number	95	7	51	153
		% within effects during construction phase	62.1	4.6	33.3	100.0
		% within project assessment	37.8	63.6	60.7	44.2
	Yes	Number	154	4	32	190
		% within effects during construction phase	81.1	2.1	16.8	100.0
		% within project assessment	61.4	36.4	38.1	54.9
	Not specified	Number	2	0	1	3
		% within effects during construction phase	66.7	0.0	33.3	100.0
		% within project assessment	0.8	0.0	1.2	0.9
Total		Number	251	11	84	346
		% within effects during construction phase	72.5	3.2	24.3	100.0
		% within project assessment	100.0	100.0	100.0	100.0

Table 2
Cross-classified table: expected effects (jobs) during the construction phase and attitudes towards the project ("project assessment").

Expected effects during the construction phase			Project assessment			Total
			Overall positive	Overall negative	Still undecided	
Jobs	Jobs will be created	Number	179	5	50	234
		% within effects during construction phase	76.5	2.1	21.4	100.0
		% within project assessment	71.3	45.5	59.5	67.6
	Jobs will be cut back	Number	6	1	8	15
		% within effects during construction phase	40.0	6.7	53.3	100.0
		% within project assessment	2.4	9.1	9.5	4.3
	No corresponding effects/effects annul each other	Number	59	5	15	79
		% within effects during construction phase	74.7	6.3	19.0	100.0
		% within project assessment	23.5	45.5	17.9	22.8
	"I do not know"/no opinion	Number	7	0	11	18
		% within effects during construction phase	38.9	0.0	61.1	100.0
		% within project assessment	2.8	0.0	13.1	5.2
Total		Number	251	11	84	346
		% within effects during construction phase	72.5	3.2	24.3	100.0
		% within project assessment	100.0	100.0	100.0	100.0

Table 3
Analyses of contingency.

Pair of variables Assessment of the project and…	**Corrected coefficient of contingency**	**Significance (Approximative)**
assessment of existing site	0.509	0.000
confidence in project proponent	0.328	0.000
state of knowledge on status of the project	0.400	0.000
state of knowledge on project′s aftermath	0.381	0.000
information on project	0.384	0.000
communication on project	0.343	0.000
new orders (construction phase)	0.253	0.004
employments (operating phase)	0.328	0.000
overall appearance of the landscape (operating phase)	0.404	0.000
habitats (operating phase)	0.331	0.000
tourism (operating phase)	0.360	0.000
traffic situation (operating phase)	0.317	0.000
environmental situation (operating phase)	0.479	0.000
social cohesion in the community (operating phase)	0.422	0.000

3.3.3. *Influencing factor "knowledge"*

The state of knowledge indicated by the respondents (knowledge on the state of planning, effects, information media) significantly correlates with their project assessment. For instance, over 50% of the interviewees indicated not to know anything about the project, while just under 50% believed to be informed on the state of planning. It turned out that a disproportionately high number of respondents who judged themselves to be (still) uninformed have not made up their mind yet as to the project assessment. On the other hand, a disproportionately high number of respondents who looked favourably upon the project called themselves "informed" about the planning. With 0.4 and $p=0.000$, the coefficient of contingency of these two variables suggest a moderately strong significant correlation. These results allow to conclude that there is a positive coherence between the level of information and the development of an attitude from the range of acceptance and that an asserted "ignorance" creates an undecided, though not negative attitude. This impression is supported by the connections which have been found between the asserted knowledge on the planning or rather on the project′s aftermath on the one hand and the project assessment on the other hand (Table 3). Despite the asserted vast ignorance, only 30% of the respondents indicated not to have themselves informed (thereby, control questions revealed a discrepancy between the respondents' self-assessment regarding their level of knowledge and their actual level of knowledge). The present results show that even those interviewees rating themselves as "not informed" do disproportionately often communicate an attitude belonging to the range of "indecisiveness in view of the project". In contrast, those who stated to have themselves informed judged the project disproportionately often positive, so that these respondents can be assigned to the range of accepting attitudes. Also this connection was

significant (moderately strongly). Slightly less than half of the respondents stated not to have ever spoken about the project with third persons. Also members of this group adopt an undecided attitude towards the project. Vice versa, members of the group who had shared their opinion on the project with others were disproportionately often positive-minded as to the planned venture. Thus, the conclusions drawn by Luz [11]: the better the knowledge on the project, the less conflictual is the position adopted by the parties affected by planning) which were confined to the area of landscape planning can also be confirmed for the field of renewable energy infrastructure planning.

3.3.4. Influencing factor "expectation of construction- and operation-related impacts"

An important factor influencing the evolution of the attitude of the parties concerned by planning, especially as to the attitude parameter of "conditional acceptance", are their expectations regarding the positive or negative effects of the project. Those expectations were requested separately for the construction phase (Table 1) and the operating phase (Table 2).

Accounting for over 50% of the answers, the expectation of new orders for the local economy was the most frequently mentioned single category in the query for the construction-related effects. Thus, it is the only construction-related effect significantly correlating with the project assessment: those interviewees who expected new orders held an exceptionally positive opinion of the project. By contrast, an above-average high share of those respondents who did not expect the project to create any new orders for the local economy held undetermined, though not negative attitudes towards the project. This correlation also featured a significantly low coefficient of contingency. However, in this context, there is a factor stemming from the status of the project (prior to the regional planning procedure) which may possibly increase the risk of negative attitudes: given that the exact location of the project and thus the location of the building site were not yet fixed at the time of the survey, the respondents could not assess the kind and extent of the project′s aftermath in detail. With the progressive specification of the planning object and its building-related effects in the planning process, this situation will change, almost certainly causing modifications in the range of attitudes. Nevertheless, a potential factor influencing the development of a conditional acceptance could already be identified in the context of the construction-related effects.

Especially in view of the longer-term consequences arising during the planning object's operating phase, the respondents' expectations significantly correlate with their project assessment (Table 2), including expectations in view of employments, the overall appearance of the landscape, habitats of animals and plants, tourism, the traffic situation, the overall environmental situation as well as the social cohesion in the community. Here, it becomes clear that expectations as to the new creation of jobs, but also as to the improvement of the overall environmental situation or rather as to the expected new immigration of indigenous wildlife, have a disproportionately strong influence on a positive project assessment. Expectations as to negative consequences, though, entail disproportionately negative or undetermined assessments. Consequently, particularly in this context, several potential influencing factors become apparent which could promote the development of an assessment group characterised by "conditional acceptance".

Summing up, the statistical context analysis has revealed that the attitude of expectation, but also the respondents' subjective, alleged state of knowledge and information has a significant influence on the project assessment and thus on the attitudes towards the project. Above, influencing factors related to the expected impacts of the construction and operating phase need to be considered, especially in view of economic effects. Here, clear signs of a potential conditional acceptance can be noticed, an attitude which is relevant also from a quantitative point of view. However, it must be taken into account that the survey could not include all potentially relevant influencing factors of acceptance (cf. [20,21]).

3.4. Module 2: Regional economic impact analysis

A regional economic impact analysis provides the frame to estimate the scope of economic effects at expert level. For this purpose, the direct investment effects on the production, the income and the employment situation are evaluated. Being based on intermediate inputs, the direct investments entail impacts in view of production, income and employment in other economic sectors, the so-called indirect effects. In a multiplier process, direct and indirect effects generate additional production capacity and accordingly income which are known as induced effects [27].

In the case example, the indirect effects have been evaluated by means of an input-output analysis and the induced effects by means of a multiplier analysis[4].

To implement the planning project, specialized construction works and other services as well as special material expenses, all of which need to be purchased outside the region, play a major role. Therefore, new orders for the local economy are rather unlikely during the construction phase, except for the hotel and catering industry. Amounting to roughly 15% of the investment sum, the direct economic effects for the concerned Federal Land are also limited. As the investment is also a rationalisation investment, direct regional economic effects are unlikely during the operating phase. Neither will any new jobs be created nor will the continuous working costs fluctuate. Yet higher profits are expected due to an increased performance of the planning project, causing the tax receipts of the affected community and the Federal Land to rise slightly.

Accordingly, indirect effects can only result from the relatively small direct effects during the construction phase. As a consequence, these indirect as well as induced effects are not pronounced either and are above limited to a short period of time.

3.5. Linking the two modules: evaluation of acceptance risks

Putting the results of the regional economic analysis in relation to the statistically determined group with the potential attitude of "conditional acceptance", it becomes clear that this group holds a considerable acceptance risk: members of this group could change their attitude parameters if they consider their economic conditions (e.g. creation of employments) not to be met. The extent of this risk can thus be substantiated by asking for the importance of this condition for the aggrieved parties (Table 4), based on the assumption that the risk of changing attitudes will increase whenever the respondents notice the non-performance of a condition they judge "very important" or "important". Accordingly, if the persons concerned perceived the non-performance of a condition they judge "less important" or "unimportant", this would imply a lower risk. Thereby, risk group I includes the respondents with a potential attitude of "conditional acceptance". Also, another very important risk group, risk group II, was identified, including those respondents with attitudes from the other three risk sphere parameters (see Fig. 1). Nonetheless, this group has "very important" or rather "important" expectations towards the project. Parallel to the risk group I it can be concluded

[4] For a detailed explanation of these two methods, please refer to e.g. [28,29]

Table 4
Specification of the acceptance risk: importance of the condition "creation of employments" for the respondents.

Question: employments will be created—how important?	Risk group I positive project assessment	Risk group II project assessment still undecided
"Very important"	76	196
"Important"	91	26
Total	167	45
Share in random sample (%)	48	13

that the (possible) opinion formation of risk group II members during the planning procedure will just hold a high acceptance risk if they perceive the non-compliance of their conditions. However, to analyse the extent of risk even more precisely, information on the relative importance of the individual conditions among each other is needed. The extent of specification achieved by the above approach, though, should in most cases be a sufficient decision basis to choose the adequate management strategy.

4. Strategies to manage acceptance risks

4.1. Socio-cultural analysis of risk groups

In order to work out an adequate management strategy, the risk groups identified in chapter 3 have been further analysed in view of the external factor of "socio-cultural affiliation" (Fig. 1), considering variables such as for instance age, gender, education, employment and income.

It turned out that risk group I includes most notably older men, particularly retirees who have quit the professional life, are not used to exchange information via the internet and who show a particularly high systemic belief in the project proponent hearkening back to the local power station site which has existed over several generations. This social group shows a particularly marked tendency to judging the area affected by the planned project as "economically underdeveloped". Therefore, if the articulated condition of "job creation" should not come true, this will not forcibly entail a change of attitudes in this group, as retirees would not be directly concerned by this failure[5].

By contrast, the risk group II whose members have (so far) held an "undecided" attitude towards the project includes an above-average high share of younger, relatively often female interviewees with a better education and who would, if the condition of "job creation" did not come true, directly experience the consequences in their own working life. It can be derived from this that also outside the group with "conditional acceptance" (cf. Fig. 1), a high, possibly even above-average high risk of attitude change towards rejection could exist.

Hence, strategies for a successful risk group management from the project initiator's viewpoint need to be conceived in a way allowing to respond especially to the needs of these two target groups.

4.2. Types of strategies

The regional economic analysis made clear that the expectations on the planned project to cause positive economic effects could not be met, provoking an acceptance risk. This acceptance risk could now be attenuated by economic compensation measures (for instance: parallel investments in the tourism industry). Should these compensation measures not be possible or not be wanted, strategies to handle the discrepancy between expected and actually occurring economic effects need to be developed, with the following types of strategies mainly coming into question:

- Strategy 1: Open, transparent addressing of the compensation problems, public information on and, if applicable, participation in the problem situation, possibly with the objective to look for a consensus-oriented solution ("strategy of transparency", [17]).
- Strategy 2: No open addressing of the problems, lack of transparency, concealment of information, based on the project initiator's hope that the group of "undetermined" or rather "conditionally accepting" actors will not play any role during the decision finding process ("strategy of concealment").

Despite the fact that a strategy of transparency is repeatedly named as important influencing factor for a project initiator to achieve planning security and success, for instance by industry associations ("Only if the citizens are permanently and extensively informed from the outset, acceptance will be possible also for large-scale projects" [30]), there is only few empirically substantiated evidence for this thesis. In fact, a study with an experimental, "virtual" design of Wiedemann and Schütz [31] arrives at the conclusion that neither the type of corporate communication nor of public participation chosen significantly influence the acceptance of an infrastructure project (here: cell site antenna). However, this study has numerous limitations, the most important ones being:

- The data basis relies on a non-representative sample.
- The study exclusively examines the acceptance of a concrete planning project, disregarding important parameters such as "strategically oriented site promotion" or "trust capital".

Other reflections based on case study analyses, though, rather advance a different view according to which "the feeling of not being taken seriously" can even incite or aggravate a deeply rooted opposition towards large-scale projects among the population (amongst others case study Stuttgart 21 [4]). The case-study based conclusions of the working group of Agterbosch are similar: "Such a strategy of informal and closed top-down decision making runs the risk of losing support … and increases the chance of social resistance" [32].

Thus, especially for companies with a considerable need for a long-term effective, positive regional image, the "strategy of concealment" entails a high risk of losing valuable trust capital as soon as information so far kept secret becomes known in public or an "acceptance" strategy on the side of the project proponent is perceived by the public as reducted to a pure marketing instrument which has been developed only to enforce a certain planning project [17]. As the case example analysis has shown, an experience based systemic trust evolved over several generations plays a major role for companies at historically grown locations ([33] p. 137) to this date. In fact, as this trust is independent on individual persons, it is particularly valuable and would be exposed to a high risk of damage through a "strategy of concealment". Companies should be aware of this risk when choosing their communication strategy.

Also in view of the results of this case example analysis suggesting that those respondents who considered themselves informed expressed disproportionately often positive assessments, an active and transparent communication strategy should rather be chosen ("Legitimation by communication" [4]).

[5] This implication is substantiated by corresponding statements of the respondents of this group ("Anyway, I am not affected any more") as to this issue. However, some of the respondents of this group indicated to judge the importance of the condition "creation of jobs" from the viewpoint of their sons/daughters and grandsons/granddaughters.

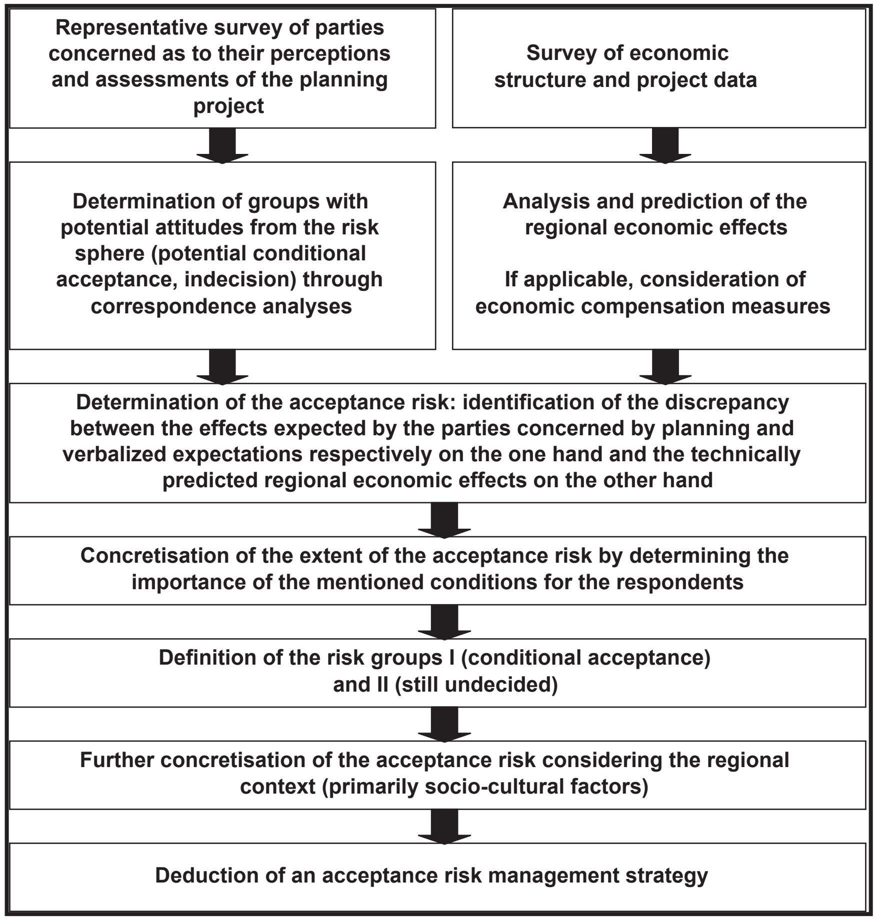


Fig. 2. Working steps to determine the acceptance risk and its management strategy.

5. Conclusion

The case example analysis successfully demonstrated the importance of defining the acceptance risk as a prerequisite for its management. In its framework, components allowing to identify the risk groups to attitude changes as well as appropriate management strategies were worked out. In further studies it could be evaluated if this methodology can be applied as tools to similar renewable energy and planning projects. In conclusion, Fig. 2 summarises these components.

References

[1] Devine-Wright P. Place attachment and public acceptance of renewable energy: a tidal energy case study. Journal of Environmental Psychology 2011;31:336–43.
[2] Musall FD, Kuik O. Local acceptance of renewable energy—A case study from southeast Germany. Energy Policy 2011;39:3252–60.
[3] Pepermans Y, Loots I. Wind farm struggles in Flanders fields: a sociological perspective. Energy Policy 2013 (, in press).
[4] Brettschneider F. Kommunikation und Meinungsbildung bei Großprojekten. In: Aus Politik und Zeitgeschichte, Beilage zur Wochenzeitung "Das Parlament". H. 44–45; 2011. S. 40–7.
[5] Brettschneider F. Legitimation durch Kommunikation? Die gesellschaftliche Debatte über Ingenieurprojekte Mining Geo 2012;3:435–9.
[6] Batel S, et al. Social acceptance of low carbon energy and associated infrastructures: a critical discussion. Energy Policy 2013;58:1–5.
[7] Sauer A, et al. Steigerung der Akzeptanz von FFH-Gebieten.. München: BfN-Skripten; 2005.
[8] Huijts NMA, Molin EJE, Steg L. Psychological factors influencing sustainable energy technology acceptance: a review-based comprehensive framework. Renewable and Sustainable Energy Reviews 2011;16:525–31.
[9] Rentsch G. Die Akzeptanz eines Schutzgebietes – untersucht am Beispiel der Einstellung der lokalen Bevölkerung zum Nationalpark Bayerischer Wald. Kallmünz/Regensburg; 1988 (= Münchener Geographische Hefte Nr. 57)
[10] Hofinger G. Formen von "Akzeptanz"—Sichtweisen auf ein Biosphärenreservat. Umweltpsychologie 2001;5(1):10–27.
[11] Luz F. Participatory landscape ecology - a basis for acceptance and implementation. Landscape and Urban Planning 2000;50:157–66.
[12] Wüstenhagen R, Wolsink M, Bürer MJ. Social acceptance of renewable energy innovation: an introduction to the concept. Energy Policy 2007;3:2683–91.
[13] Jobert A, Laborgne P, Mimler S. Local acceptance of wind energy: factors of success identified in French and German case studies. Energy Policy 2007;35:2751–60.
[14] Wolsink M. Wind power implementation: the nature of public attitudes: equity and fairness instead of 'backyard motives'. Renewable and Sustainable Energy Reviews 2007;11:1188–207.
[15] Dietz Z, Stern PC, editors. Washington, DC: The National Academic Press; 2008.
[16] Renn O. Einführungsvortrag Bürgerbeteiligung Aktueller Forschungsstand und Folgerungen für die praktische Umsetzung. In: Hilpert J. (Hrsg.): Nutzen und Risiken öffentlicher Großprojekte als Voraussetzung für eine größere gesellschaftliche Akzeptanz; 2011. S. 19–44.
[17] Hilpert J, editor. Nutzen und Risiken öffentlicher Großprojekte als Voraussetzung für eine größere gesellschaftliche Akzeptanz, Stuttgart; 2011 (=Stuttgarter Beiträge zur Risiko- und Nachhaltigkeitsforschung, Nr. 19).
[18] Hall N, et al. Societal acceptance of wind farms: analysis of four common themes across Australian case studies. Energy Policy 2013;58:200–8.
[19] Zoellner J, et al. Public acceptance of renewable energies: results from case studies in Germany. Energy Policy 2008;36:4136–41.
[20] Lucke D. Akzeptanz, Opladen; 1995.
[21] Altmann T. Dachmarkenprozesse in der Regionalentwicklung, Akzeptanzanalyse am Beispiel der Dachmarke Südtirol (=Arbeitspapiere zur Regionalentwicklung, Elektronische Schriftenreihe des Lehrstuhls Regionalentwicklung und Raumordnung, Band 12). Technische Universität: Kaiserslautern; 2011.
[22] Raven RPJM, et al. Modulating societal acceptance in new energy projects: towards a toolkit methodology for project managers. Energy 2009;34:564–74.
[23] Bundesagentur für Arbeit. Sozialversicherungspflichtige Beschäftigte am Arbeitsort auf Gemeindeebene. Frankfurt, Bundesagentur für Arbeit, Statistik-Service; 2011.

[24] Metz R. Mineralogisch-landeskundliche Wanderungen im Nordschwarzwald, 2. Auflage, Moritz Schauenburg Verlag: Lahr; 1977.
[25] Cramer E, Kamps U. Grundlagen der Wahrscheinlichkeitsrechnung und Statistik: Ein Skript für Studierende der Informatik, der Ingenieur- und Wirtschaftswissenschaften. Berlin Heidelberg: Springer Verlag; 2007.
[26] Duller C. Einführung in die Statistik mit EXCEL und SPSS. Heidelberg: Phyica-Verlag; 2007.
[27] Clermont C. Regionalwirtschaftliche Effekte von Wissenschaftseinrichtungen. Frankfurt am Main: Peter Lang, Europäischer Verlag der Wissenschaften; 1997.
[28] McCann P. Urban and Regional Economics. Oxford: Oxford University Press; 2001.
[29] Armstrong H, Taylor J. Regional economics and policy. Malden MA: Blackwell; 2004.
[30] BDI (Bundesverband der deutschen Industrie e.V.), editors. Positionspapier: Die Zukunft von Infrastrukturprojekten - Akzeptanz steigern Vorhaben beschleunigen Planung vorantreiben, Berlin; 2011⟨http://www.bdi.eu/download_content/Marketing/Broschuere_BDI_Akzeptanzpapier.pdf⟩ (22.03.12).
[31] Wiedemann PM, Schütz H. Informing the public about information and participation strategies in the siting of mobile communication base stations: an experimental study. Health, Risk and Society 2008;10(6):517–34.
[32] Agterbosch S, Meertens RM, Vermeulen WJV. The relative importance of social and institutional conditions in the planning of wind power projects. Renewable and Sustainable Energy Reviews 2009;13:393–405.
[33] Straßheim H, Oppen M. Lernen in Städtenetzwerken. Kooperation – Konflikte – Kompetenzentwicklung, Berlin; 2006 (=Modernisierung des öffentlichen Sektors, Sonderband 27).